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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/09213

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ C01B31/02, C01B31/12, B09B3/00, C10B53/00, C10B1/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ C01B31/02, C01B31/12, B09B3/00, C10B53/00, C10B1/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2003
Kokai Jitsuyo Shinan Koho	1971-2003	Toroku Jitsuyo Shinan Koho	1994-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 9-22712 A (Kazuteru SHINOHARA), 02 September, 1997 (02.09.97), Full text (Family: none)	1-18
Y	JP 51-36287 A (Kobe Steel, Ltd.), 27 March, 1976 (27.03.76), Full text (Family: none)	1-18
Y	JP 11-37432 A (Tsukishima Kikai Co., Ltd.), 12 February, 1999 (12.02.99), Par. No. [0009]; Fig. 2 (Family: none)	1-18

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search
07 November, 2003 (07.11.03)

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Name and mailing address of the ISA/
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 57-15838 A (Central Glass Co., Ltd.), 27 January, 1982 (27.01.82), Claims; page 1, right column, lines 4 to 5; Fig. 1 (Family: none)	1-18
Y	JP 48-34366 A (Masato TANAKA), 18 May, 1973 (18.05.73), Page 2, upper right column, line 10 to lower left column, line 7; Fig. 1 (Family: none)	1-18
Y	JP 7-70613 A (Nippon Steel Corp.), 14 March, 1995 (14.03.95), Claim 3; Par. Nos. [0008], [0010]; Fig. 1 (Family: none)	1-4, 7-18
Y	JP 8-278082 A (Toyoda Automatic Loom Works, Ltd.), 22 October, 1996 (22.10.96), Par. Nos. [0021] to [0023] (Family: none)	3, 4
Y	JP 63-176989 A (Daido Netsu Kagaku Kabushiki Kaisha), 21 July, 1988 (21.07.88), Claims (Family: none)	3, 4
Y	JP 11-76977 A (Yamatomi Sangyo Kabushiki Kaisha), 23 March, 1999 (23.03.99), Par. Nos. [0011], [0025]; Figs. 1, 3 (Family: none)	7, 10-12
Y	JP 2003-64372 A (Noriyuki YAMAZAKI), 05 March, 2003 (05.03.03), Claims; Figs. 1 to 5 (Family: none)	9, 17
Y	JP 2003-34518 A (Noriyuki YAMAZAKI), 07 February, 2003 (07.02.03), Claim 1 (Family: none)	16, 17